

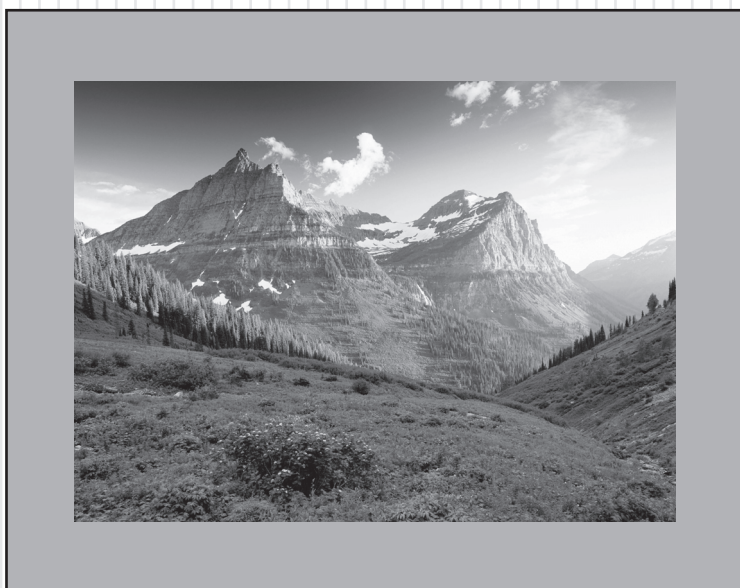
# *Montana* *Comprehensive Assessment* *System* (MontCAS, Phase 2 CRT)

Student Name:

School Name:

Teacher/Class:

GRADE 4  
COMMON RELEASED ITEMS  
SPRING 2008



**OPI**

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## **General Directions**

This test contains nine sessions: three in reading, three in mathematics, and three in science. The sessions are made up of multiple-choice questions and questions for which you must show your work or write out your answers. Write your answers to all of the questions in your Student Response Booklet. For the reading parts of the test, read each selection before answering the questions.

For each multiple-choice question, choose the best answer. Fill in the bubble in your Student Response Booklet that corresponds to your answer choice for that question.

Some questions ask you to show your work or to write out your answers. Write your answers to these questions in the spaces provided in your Student Response Booklet. Your answers must fit in the spaces provided. Any part of an answer outside the box might not be scored.

Be sure to answer all parts of each question, and to answer completely. For example, if a question asks you to explain your reasoning or show your work, be sure to do so. You can receive points for a partially correct answer, so try to answer every question.

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## Reading Session 1

**This test session includes reading selections, multiple-choice questions, and a question for which you must write out your answer. After you read each selection, answer the questions about it in the spaces provided in your Student Response Booklet. You may not use a dictionary or any other reference tool during this session.**

### Tending the Fire

The passage used for the following items was taken from *Tending the Fire: The Story of Maria Martinez* by Juddi Morris (1997, Rising Moon). Due to copyright restrictions, we are unable to reprint the passage in this document.



**Mark your answers in the section marked “Reading—Session 1” in your Student Response Booklet.**

1. Where does the story **mainly** take place?
  - A. around a campfire
  - B. in the pueblo kitchen
  - C. near the fireplace
  - D. at the bottom of the slope
2. What does Maria like best about wintertime?
  - A. visiting friends
  - B. evening storytelling
  - C. playing in the snow
  - D. eating with family
3. Why do Jaime and Marta visit Maria’s family?
  - A. to tell the children stories from the Tewa culture
  - B. to help the children identify birds and animals
  - C. to let the children use their imaginations
  - D. to teach the children to respect old people
4. In paragraph 6, what does coziness mean?
  - A. earthy smells
  - B. large size
  - C. warmth and closeness
  - D. colors and lighting
5. In paragraph 8, the word “cookies” is in parentheses ( ) because it
  - A. is a Spanish word.
  - B. means the same as the word before it.
  - C. is spoken aloud by Reyes and Ana.
  - D. shows the most important idea in the sentence.
6. Based on the story, what is **most likely** true of Tomas?
  - A. He is one of the old people.
  - B. He grows fruits and vegetables on a farm.
  - C. He is the best storyteller in the pueblo.
  - D. He writes stories for the old people to tell.
7. What does this story **mostly** show about the Tewa people?
  - A. The old people plant seeds each spring.
  - B. Families live close to one another in pueblos.
  - C. The children enjoy the beginning of winter.
  - D. It is important to teach customs to the next generation.



*Read this passage about making a bamboo strip book. Then answer the questions that follow.*

## Chinese Bamboo Strip Book

*by Arlette N. Braman*

It's hard to imagine a time when people didn't have books. The earliest humans had to paint pictures on cave walls. Later cultures used stone or clay tablets. The ancient Egyptians may have been the first people to make books by writing on scrolls made of **papyrus** (a grasslike plant whose stems are used as a writing material). The ancient Greeks are credited with making the first bound book, which had wooden boards for the covers.

The first people in China to leave written records lived during the Shang dynasty, from about 1766 to 1122 B.C. Writers made Chinese characters on strips of **bamboo** (a tropical woody grass with hard stems). Using a brush and ink, the writers started at the top of the strip and worked their way to the bottom. When there

- 2** were enough strips to make into a book, the strips were put in order, with the first strip on the right and the last on the left. Then the strips were tied together with silk string or leather strips. The book could be rolled up for easy carrying.

Unfortunately, most bamboo strip books and written records decayed over time. Very few records about this period in Chinese history exist today. In A.D. 105, the Chinese invented paper and no longer needed to use bamboo to make books.

It's easy to make your own bamboo strip book using craft sticks instead of real bamboo.



Picture A

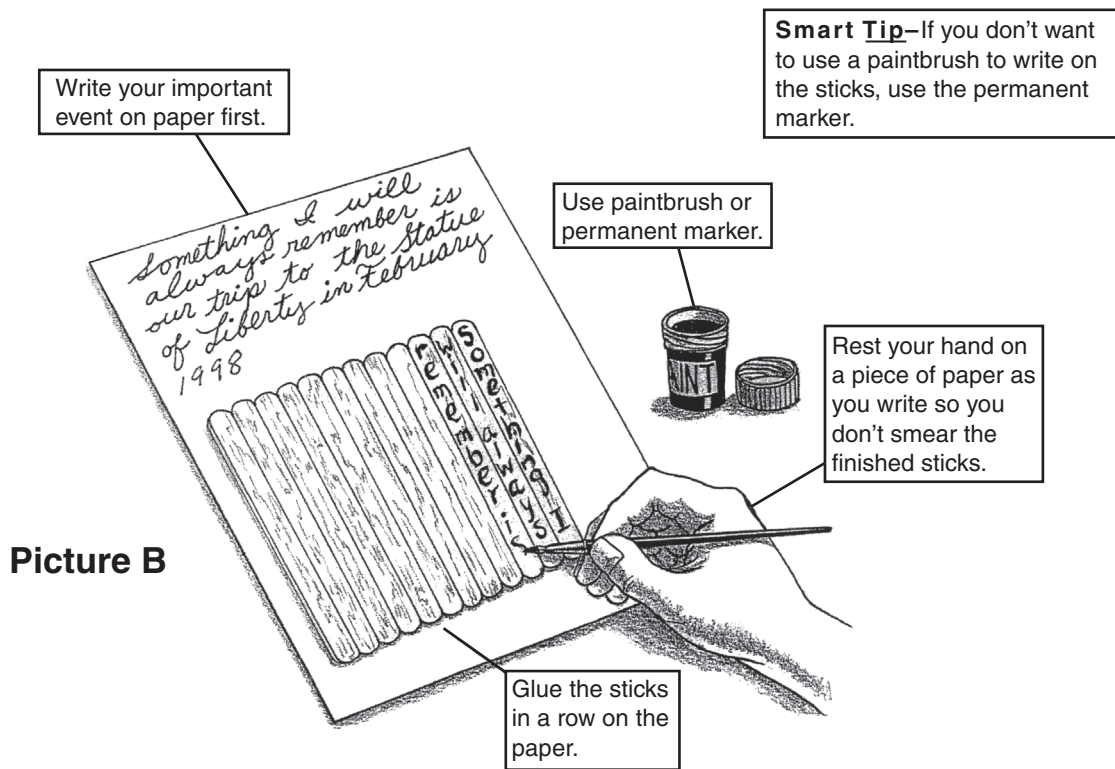


## Here's What You Need

- glue
- 12 or more wooden craft sticks
- 8½-by-11-inch (21.5-by-28-cm) sheet of paper
- pencil
- small-bristle craft paintbrush
- black acrylic paint
- fine-tip permanent marker (optional)
- small piece of paper
- scissors

## Here's What You Do

1. Since bamboo strip books told of Chinese life, why not record one important event in your life on your bamboo strip book. It should be about something you want to remember forever. Did you travel to another continent, get your black belt in karate, or win a contest you entered? Think about it.
2. Glue the wooden sticks in a row on the paper.
3. While you're waiting for the glue to dry, write your important event on the paper. You can start like this: "Something I will always remember is . . ." Don't forget to record the date your event took place.

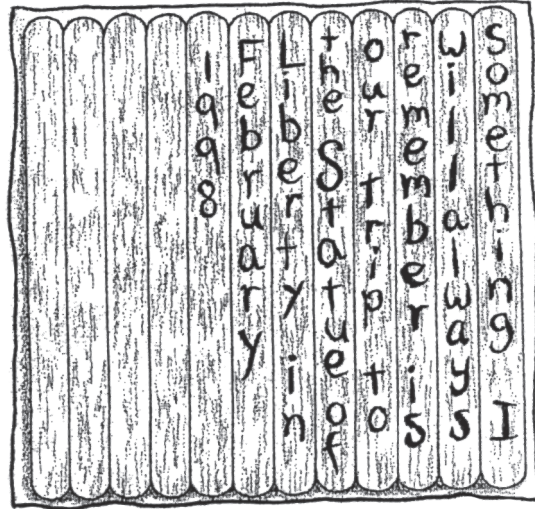


Picture B





4. *Print* your important event on the sticks. Use the brush and paint (like the Chinese). You can do it the way bamboo strip books were written—top to bottom, right to left—as shown. Start at the top of the right stick. When you get to the bottom of that stick, go to the top of the next stick. Continue until you are finished. Remember to leave a space between words.
5. If you need more sticks, glue them on the paper. After you finish recording your event, cut around the outside of your bamboo strip book to get rid of the extra paper. Now an important event in your life has been recorded. Read your bamboo strip book to someone.



Picture C

**Mark your answers in the section marked "Reading—Session 1" in your Student Response Booklet.**

15. According to the passage, how were early cultures **alike**?
  - A. They made covers to protect their books.
  - B. They arranged their writing from right to left.
  - C. They used objects from nature as writing surfaces.
  - D. They created paint from materials in the environment.
16. In the passage, strips are
  - A. entire sides.
  - B. outer edges.
  - C. long strings.
  - D. narrow pieces.



17. Which question is answered in paragraph 2?
- A. How did Chinese people first construct their books?
  - B. What kinds of stories were written in early China?
  - C. What did China look like during the Shang dynasty?
  - D. How was bamboo created by the first Chinese people?
18. According to the passage, why is it important to create written records?
- A. to imitate the style of other writers
  - B. to help improve writing ability
  - C. to remember and share information
  - D. to create books and sell them to people
19. What is the **main** reason the Chinese people stopped using bamboo to make books?
- A. They learned bamboo was very expensive.
  - B. They invented another type of material to use.
  - C. They thought the writing was hard to read.
  - D. They found bamboo took too much time to make.
20. What is the **most likely** reason the author included the section called “Here’s What You Need”?
- A. to describe the uses of bamboo
  - B. to explain the steps of the activity
  - C. to explore the history of ancient books
  - D. to list the materials used to make a book
21. The **first** step in the activity is to
- A. place the sticks in rows.
  - B. practice using a paintbrush.
  - C. think of an important experience.
  - D. write an event on paper.
22. In the “Here’s What You Do” section, which step helps the reader use the Chinese style of writing?
- A. step 1
  - B. step 2
  - C. step 4
  - D. step 5





23. Which step in making a bamboo strip book comes **last**?
- A. talking about the event
  - B. removing the extra paper
  - C. making a cover for the book
  - D. tying sticks together with string

Use the dictionary entry below to answer question 24.

**tip** *n* **1.** the end of a pointed object: *The pencil has a sharp tip.* **2.** a gift of money: *The customer gave the waiter a large tip.* **3.** the top point of a mountain or hill: *There is a clear view from the tip of the hill.* **4.** a helpful idea for doing something: *She is following a tip to solve the problem.*

24. Which definition of the word tip is used in the title “Smart Tip”?
- A. definition 1
  - B. definition 2
  - C. definition 3
  - D. definition 4

25. In Picture B, the information in the boxes helps readers to
- A. practice other languages.
  - B. follow directions carefully.
  - C. decorate the completed book.
  - D. separate the useless information.

26. This passage would **most likely** be found in a book about
- A. making paper.
  - B. popular writers.
  - C. learning languages.
  - D. world cultures.

**Write your answer in the space provided for it in your Student Response Booklet.**

27. Suppose a friend is creating a bamboo strip book. What are **three** important things you should tell your friend about making the bamboo strip book? Use details from the passage to explain your answer.

## Reading Session 2

**This test session includes a reading selection and multiple-choice questions. After you read the selection, answer the questions about it in the spaces provided in your Student Response Booklet. You may not use a dictionary or any other reference tool during this session.**

### Polar Solar Collectors

The passage “Polar Solar Collectors” used for the following items was taken from *Science Crafts for Kids* by Gwen Diehn and Terry Krautwurst (1994, Sterling/Lark). Due to copyright restrictions, we are unable to reprint the passage in this document.



**Mark your answers in the section marked "Reading—Session 2" in your Student Response Booklet.**

28. The picture of the polar bears **mainly** shows
- A. where polar bears live.
  - B. why polar bears stay warm.
  - C. where polar bears travel.
  - D. how polar bears collect heat.
29. What is the **main** purpose of paragraph 2?
- A. to describe polar bears as large and heavy
  - B. to explain why polar bears live in cold places
  - C. to identify polar bears as good solar collectors
  - D. to explain why animals make the best solar collectors
30. Polar bear hairs look white because they
- A. are attached to white skin.
  - B. are filled with warm water.
  - C. are hollow and reflect light.
  - D. are shaped like small pipes.
31. How do polar bear hairs act as solar collectors?
- A. They gather warm water.
  - B. They grow in different directions.
  - C. They point directly at the sun.
  - D. They trap the sun's ultraviolet energy.
32. Based on information in the article, no solar collector would work well in a place that
- A. stays cold.
  - B. gets little rainfall.
  - C. has people.
  - D. gets little sunlight.



33. According to the article, why are polar bears better at collecting solar energy than manmade solar collectors?

- A. They are found in the coldest places on Earth.
- B. They capture sunlight from any direction.
- C. They perform tricks to capture more sunlight.
- D. They are easy to find in cold places.

34. Why does the author **most likely** end the article with, “Maybe someday all solar collectors will be white and fuzzy”?

- A. to describe why polar bears are furry
- B. to explain how solar collectors are built
- C. to share a funny thought about the future
- D. to repeat an important idea from the article

## **Reading Session 3**

No items released from this session in 2007/2008.

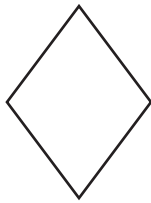
# Mathematics

## Session 1 (No Calculator)

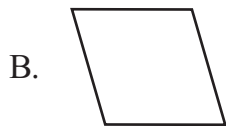
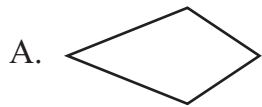
This test session includes multiple-choice questions and questions for which you must show your work or write out your answer. You may NOT use a calculator during this session.

Mark your answers in the section marked "Mathematics—Session 1 (No Calculator)" in your Student Response Booklet.

1. Oliver has the figure shown below.



Which figure is the same size and shape as Oliver's?



3. What is 615,230 rounded to the nearest ten thousand?

A. 600,000  
B. 610,000  
C. 615,000  
D. 620,000





















5. Which unit would be **best** for measuring the mass of a glue stick?


A. gram  
B. millimeter  
C. kilogram  
D. liter



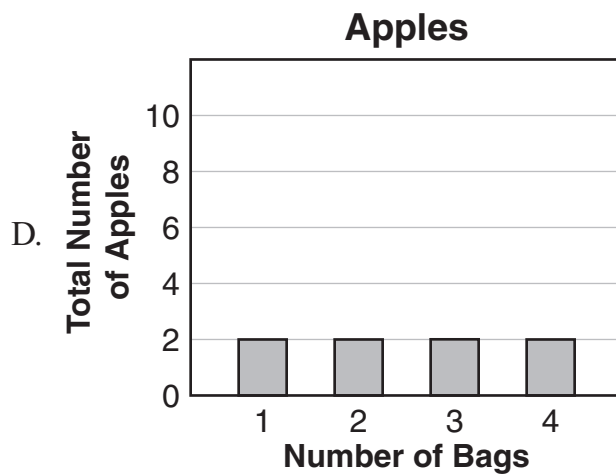
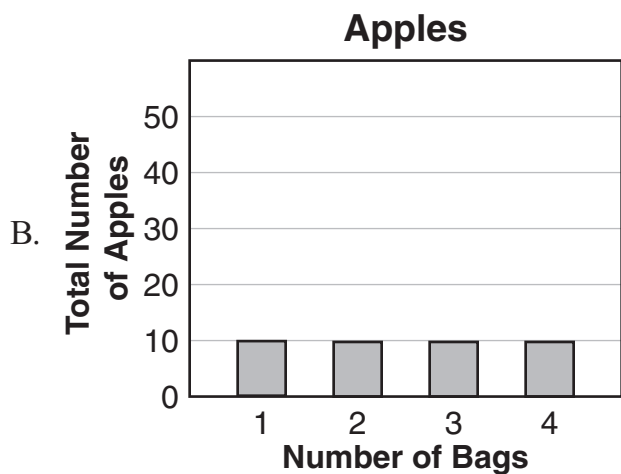
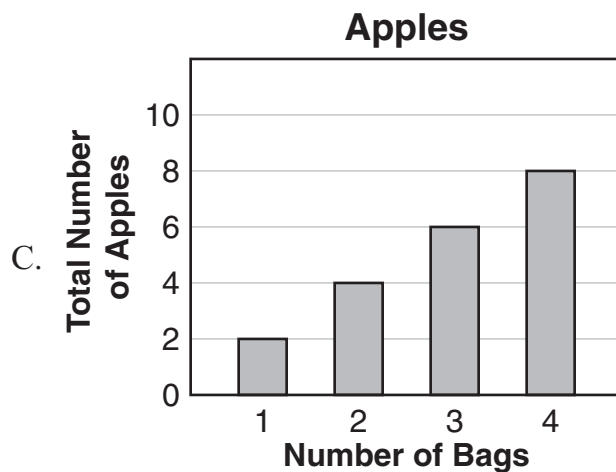
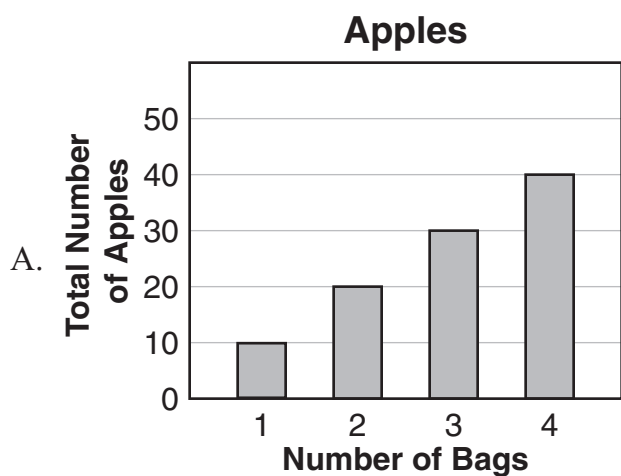


8. Look at the pictograph below.

Apples	
Number of Bags	Total Number of Apples
1	 
2	   
3	     
4	       

Key	
	stands for 5 apples

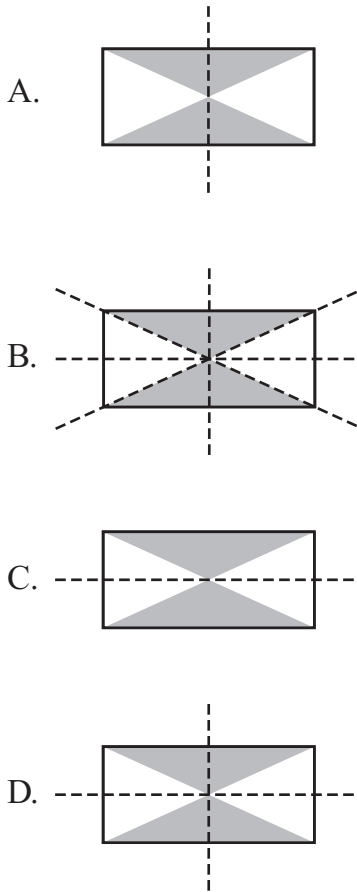
Which bar graph shows the same information?



9. Which measurement is **closest** to the length of a jump rope?

- A. 3 millimeters
- B. 3 centimeters
- C. 3 meters
- D. 3 kilometers

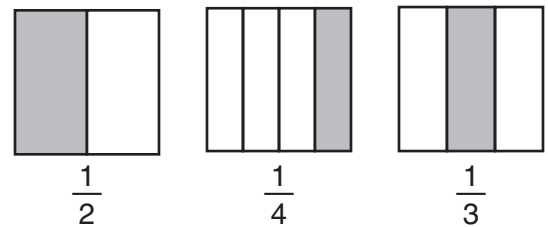
10. Which flag is shown with all of its lines of symmetry?



11. Jerome is 3 years younger than his sister. His sister is 14 years old. Which number sentence should be used to find how old Jerome is?

- A.  $\square - 3 = 14$
- B.  $14 + \square = 3$
- C.  $3 + 14 = \square$
- D.  $14 - \square = 3$

12. Clarissa shaded the squares below to show fractions.

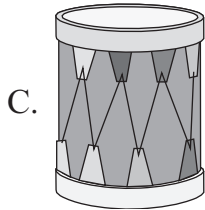
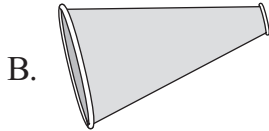
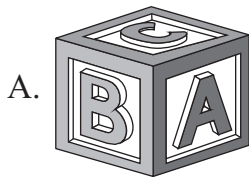


Which list of fractions is in order from **least** to **greatest**?

- A.  $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$
- B.  $\frac{1}{3}, \frac{1}{2}, \frac{1}{4}$
- C.  $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}$
- D.  $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}$



18. Which toy is shaped like a sphere?



22. The list below shows the number of points Andrea scored in seven different basketball games.

7, 12, 8, 8, 12, 11, 12

What is the most common number of points Andrea scored in a game?

- A. 8
- B. 10
- C. 11
- D. 12



**Write your answer in the space provided for it in your Student Response Booklet.  
Show all of your work.**

24. Subtract:

$$\begin{array}{r} 5407 \\ - 3288 \\ \hline \end{array}$$

**Write your answer in the space provided for it in your Student Response Booklet.  
Show all of your work.**

25. Haley made a secret-number guessing game. She picked a number **less** than 23 and wrote three clues about her number.

**Clue 1:** My number is even.

a. List all the numbers that Haley's secret number could be.

**Clue 2:** I say my number when I start at 4 and skip-count by 4s.

b. List all the numbers that Haley's secret number could be.

**Clue 3:** My number is a multiple of 3.

c. What is Haley's secret number?

d. Make another secret-number guessing game.

- Write three clues Haley could use to find your number.
- The game must have **only one** correct answer.
- Be sure to write the answer.

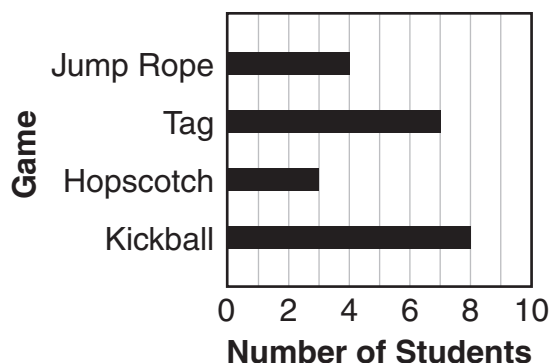
# Mathematics

## Session 2 (No Calculator)

This test session includes multiple-choice questions and a question for which you must show your work or write out your answer. You may NOT use a calculator during this session.

Mark your answers in the section marked “Mathematics—Session 2 (No Calculator)” in your Student Response Booklet.

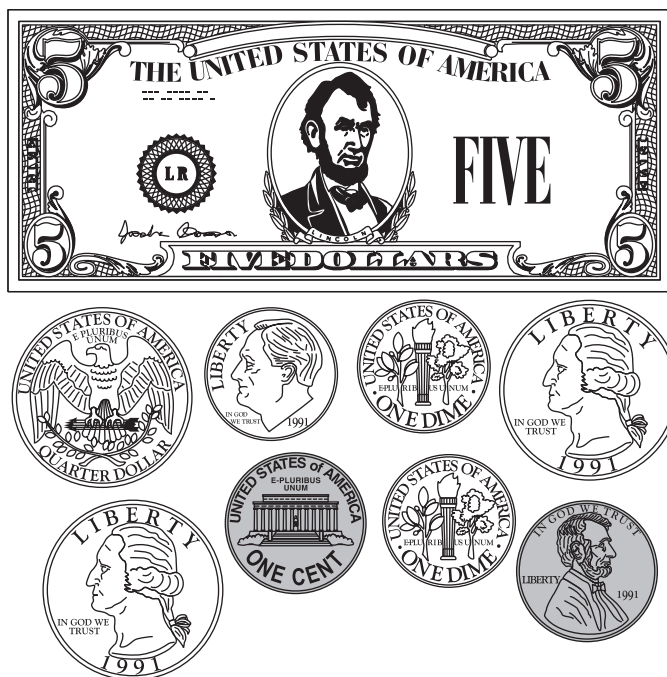
26. Mrs. Garcia asked her students, “What game do you like to play the most at recess?” The bar graph below shows their answers.



Which title would be **best** for this bar graph?

- A. Recess Games at Our School
- B. All the Recess Games We Play
- C. The Recess Games We Played Today
- D. Our Favorite Recess Games

27. Ricky put the money shown below in his pocket.



How much money did Ricky put in his pocket?

- A. \$5.07
- B. \$5.92
- C. \$6.07
- D. \$6.15



36. Look at the clock shown below.



What time does the clock show?

- A. 6:50
- B. 7:10
- C. 7:50
- D. 10:35

40. Ashley drew a parallelogram that has no right angles. Which shape did Ashley draw?

- A.
- B.
- C.
- D.

41. Sam is putting straws in boxes. He puts 50 straws in each box. Which chart shows the **total** number of straws in different numbers of boxes?

**Straws**

Number of Boxes	Total Number of Straws
2	100
3	150
4	200
5	250

**Straws**

Number of Boxes	Total Number of Straws
2	50
3	100
4	200
5	400

**Straws**

Number of Boxes	Total Number of Straws
2	100
3	200
4	300
5	400

**Straws**

Number of Boxes	Total Number of Straws
2	50
3	50
4	50
5	50



42. Mrs. Breen planted 72 flowers in 9 rows. She planted the same number of flowers in each row. Which number sentence could be used to find the number of flowers planted in each row?

A.  $72 + 9 = \square$   
B.  $72 \times 9 = \square$   
C.  $72 - 9 = \square$   
D.  $72 \div 9 = \square$

43. A school cafeteria bought 24 packs of napkins. Each pack has 350 napkins. How many napkins did the school cafeteria buy altogether?

A. 2,100  
B. 7,200  
C. 8,400  
D. 10,400

45. Dean wrote the number sentence below.

$$5 \times 4 \times 2 = \square \times 5 \times 2$$

What number makes this number sentence true?

A. 2  
B. 4  
C. 10  
D. 40













47. Marcia collected the information in the tally chart shown below.

**Favorite Colors**


Color	Number of Students
Red	IIII
Blue	IIII II
Green	II
Purple	IIII I


She used the information from the tally chart to make the pictograph shown below.


**Favorite Colors**


Color	Number of Students
Red	 
Blue	    
Green	
Purple	   

Which key did Marcia use to make her pictograph?

A. **Key**  
 stands for 1 student

B. **Key**  
 stands for 2 students

C. **Key**  
 stands for 3 students

D. **Key**  
 stands for 4 students



**Write your answer in the space provided for it in your Student Response Booklet.  
Show all of your work.**

48. Divide:

$$5224 \div 8 =$$

# Mathematics

## Session 3 (Calculator)

This test session includes multiple-choice questions. You may use a calculator during this session.

Mark your answers in the section marked "Mathematics—Session 3 (Calculator)" in your Student Response Booklet.

52. The numbers below follow a pattern.

10, 18, 20, 28, 30, 38, 40, 48, 50, \_\_?, \_\_?

What are the next two numbers in the pattern?

- A. 58, 66
- B. 52, 60
- C. 58, 60
- D. 52, 54

55. The chart below shows the first graders and fourth graders who are going to become reading buddies.

**Reading Buddies**


First Graders	Fourth Graders
Cindy Joel Brooke Ryan	Mike Sara

How many different ways can 1 first grader and 1 fourth grader be matched as reading buddies?

- A. 2
- B. 4
- C. 6
- D. 8


61. Wendy bought a notebook with 150 pages. She used 64 pages to draw pictures and 38 pages to write stories. How many pages does Wendy have left?

- A. 48
- B. 86
- C. 102
- D. 252

62. Each  stands for the **same** number in the number sentences below.

$$\square \times \square = 9$$

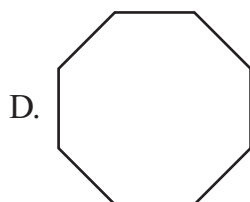
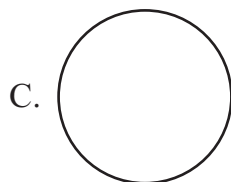
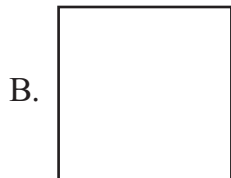
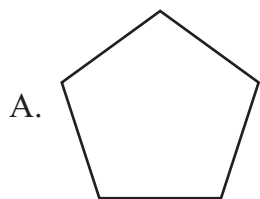
$$10 + \square = \bigcirc$$

What number does the  stand for?

- A. 3
- B. 7
- C. 13
- D. 19



64. Latoya made a shape by placing exactly two triangles together. Which shape did she make?



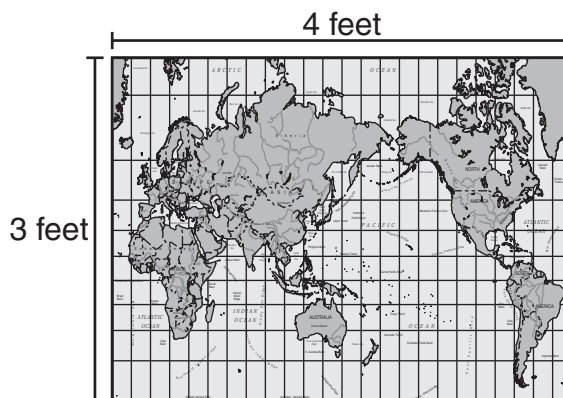
66. Ms. Kennedy gave 10 children some stickers to share equally. She wrote the number sentence below to show how many stickers she gave to each child.

$$\square \div 10 = 2$$

What is the total number of stickers Ms. Kennedy gave to the children?

- A. 5  
B. 8  
C. 12  
D. 20

67. Kelly wants to put a frame around the map shown below.



What is the distance around this map?

- A. 7 feet  
B. 12 feet  
C. 14 feet  
D. 16 feet



68. The numbers below follow a pattern.

5, 10, 6, 12, 8, 16, 12, 24, 20

What is the rule for the pattern?

- A. Multiply by 4 and then subtract 2.
- B. Subtract 4 and then multiply by 2.
- C. Add 5 and then subtract 4.
- D. Multiply by 2 and then subtract 4.

# Science

## Session 1

This test session includes multiple-choice questions and a question for which you must write out your answer. Be sure to answer all parts of the question.

Mark your answers in the section marked "Science—Session 1" in your Student Response Booklet.

1. Some of the energy stored in the human body is used to produce motion. What else is produced when the body is in motion?

A. electricity  
B. heat  
C. light  
D. magnetism

2. The picture below shows clam fossils.



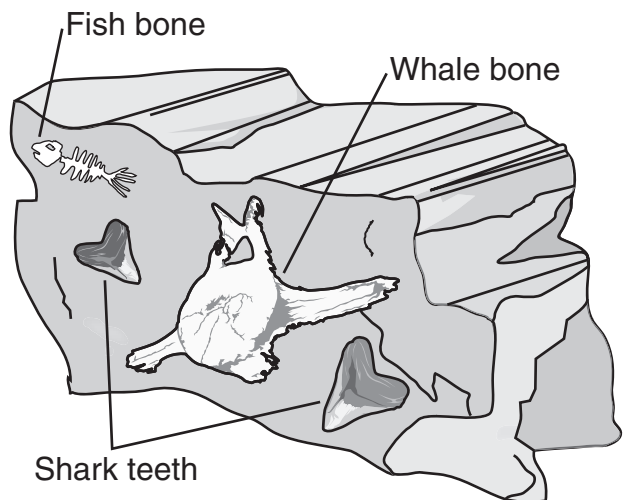
These clam fossils were found on dry land far away from the ocean. Which statement **best** explains how they got there?

A. The clams were able to travel on land.  
B. The land was under an ocean a long time ago.  
C. The fossils were not made by real ocean clams.  
D. The clam shells were dropped by ocean birds.

3. When a dam is built on a river, the environment of the river changes. Which animal would be **least** affected by these environmental changes?

A. a crayfish  
B. a deer  
C. a fish  
D. a frog

4. Look at the drawing of a rock below.



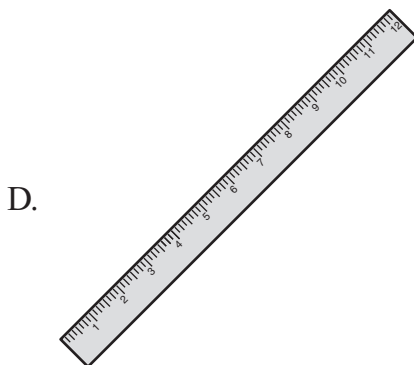
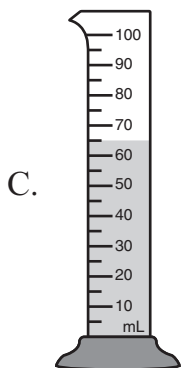
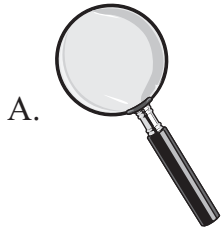
In which kind of place did this rock **most likely** form?

A. a swamp  
B. a shallow lake  
C. a forest  
D. a deep ocean





5. Which tool should students use to look at sand grains?



8. For a long time, wild mint plants found in Montana were used to kill germs. How did this plant help people living in the area?
- A. It increased food supplies.
  - B. It improved corn production.
  - C. It stopped infections caused by bacteria.
  - D. It ended diseases inherited from parents.
9. What is the **best** way for a student to find out if a plant's roots will grow downward when the seed is planted upside down?
- A. making an educated guess about root growth
  - B. looking at a picture of roots as a plant grows
  - C. measuring the length of a stem as it grows
  - D. observing root growth by planting seeds in different ways

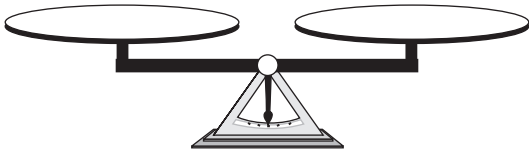


10. Tina is pushing a book cart in a straight line in her classroom, as shown below.



How can Tina turn the book cart to the right to go out the door?

- A. by pushing the book cart faster
  - B. by pushing on the left side of the book cart
  - C. by pulling the book cart backward
  - D. by pulling on the left side of the book cart
11. A student is going to use the tool below to classify objects by a physical property.



By which property is the student going to classify objects?

- A. density
- B. mass
- C. size
- D. volume

15. Which action produces heat?

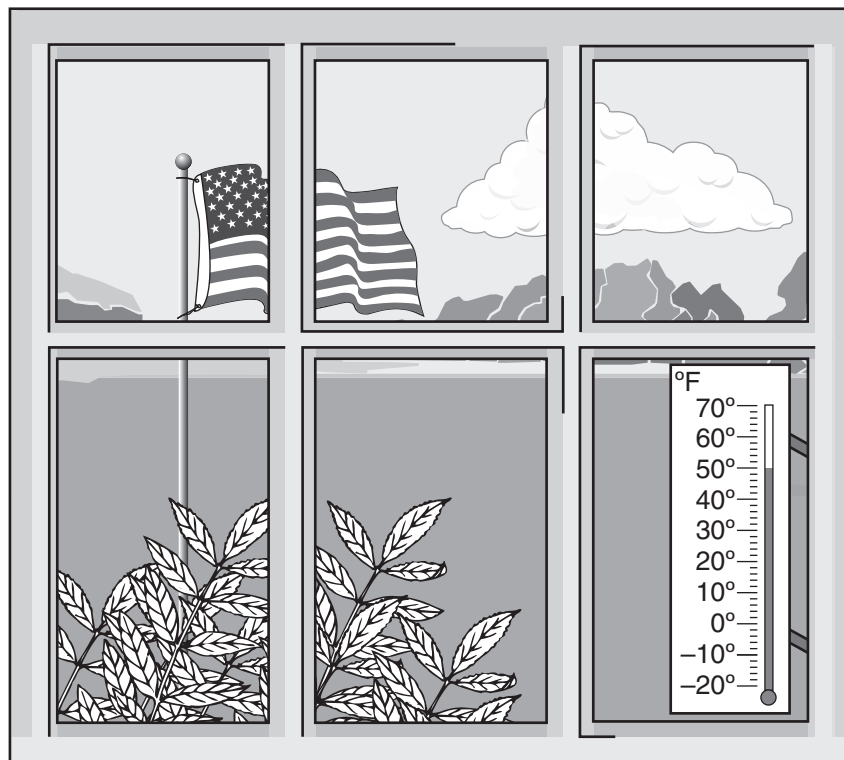
- A. adding ice to a hot drink
- B. wearing wool clothing
- C. burning wood in a campfire
- D. keeping cold air out of a house

16. How do insects help plants?

- A. They carry pollen from flower to flower.
- B. They lay eggs on the leaves.
- C. They eat leaves, fruit, and stems.
- D. They remove extra minerals from the soil.



17. Look at the picture below.



Which weather report **best** describes the weather shown in the picture?

- A. cool, with a gentle breeze
- B. cold, with snow developing
- C. warm, with no wind
- D. hot, with plenty of sun



18. Which body part does a fish use to breathe in water?

- A. fins
- B. gills
- C. lungs
- D. scales

19. Look at the picture of a sand dune below.



How was this sand dune **most likely** formed?

- A. by wind
- B. by ocean waves
- C. by animals digging
- D. by ice

23. Dan is moving a toy cart across a table. He finds that it moves 10 cm every second. Which table correctly describes the toy cart's position over time?

A.

Time (s)	Position (cm)
0	0
1	10
2	20
3	30

B.

Time (s)	Position (cm)
0	0
1	10
2	10
3	10

C.

Time (s)	Speed (cm/s)
0	0
1	10
2	20
3	30

D.

Time (s)	Speed (cm/s)
1	30
2	20
3	10
4	0



24. Alex records moon observations at 8:00 P.M. every night for a month. Which sentence **best** describes Alex's observations?
- A. The Moon stays in one place in the sky and appears to change shape.
  - B. The Moon moves across the sky and appears to change shape.
  - C. The Moon stays in one place in the sky and looks like it has the same shape.
  - D. The Moon moves across the sky and looks like it has the same shape.
25. What can scientists learn by studying damage from earthquakes?
- A. how to protect buildings from lightning
  - B. how to make stronger buildings
  - C. how to predict earthquakes
  - D. how to stop earthquakes

26. In which material are seeds planted?
- A. rock
  - B. silver
  - C. soil
  - D. wood



**Write your answer in the space provided for it in your Student Response Booklet.**

27. The desert is a type of environment found in parts of North America, Europe, and Asia.

- a. Describe **two** physical characteristics of the desert environment. You may use drawings.
- b. Identify **two** organisms that live in the desert.



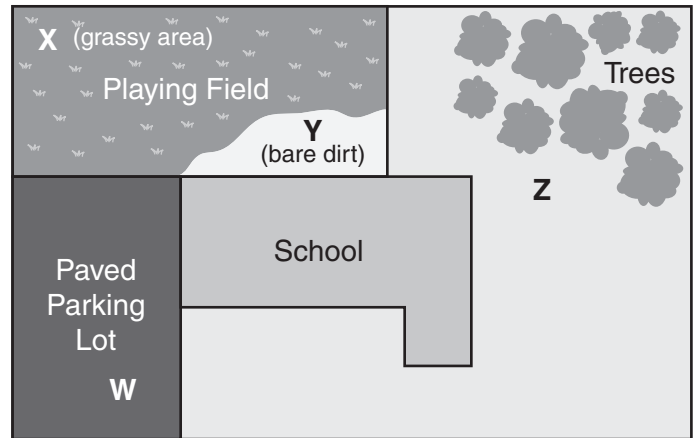
## Science Session 2

**This test session includes multiple-choice questions.**

**Mark your answers in the section marked "Science—Session 2" in your Student Response Booklet.**

28. How can a person produce heat?
- A. by rubbing both hands together
  - B. by wearing fleece clothing
  - C. by wearing insulated boots
  - D. by drinking a hot drink
29. The part of a plant usually below the ground that absorbs water and minerals is
- A. the leaves.
  - B. the roots.
  - C. the seed.
  - D. the stem.
30. Where does a plant get the minerals it needs for growth?
- A. from air
  - B. from pollen
  - C. from soil
  - D. from sunlight

31. The picture below shows the areas around a school.

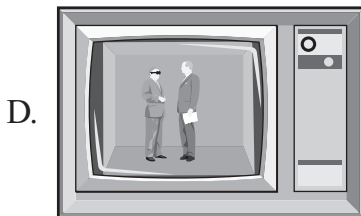
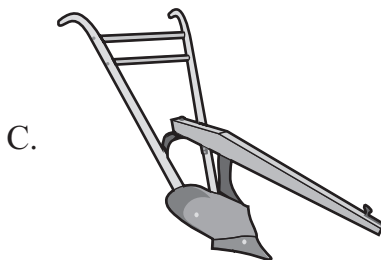
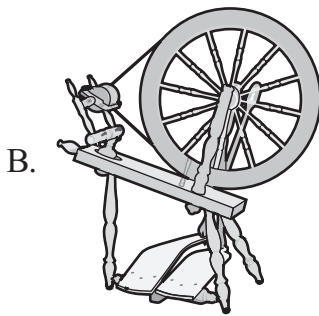
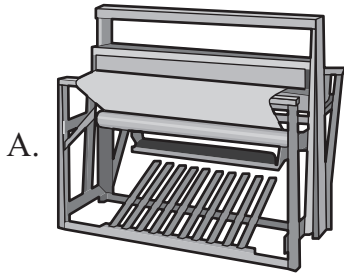


Which location will have the most erosion?

- A. location W
- B. location X
- C. location Y
- D. location Z



35. The first electric battery was made in 1800. Which technology did this device make possible?



36. Which sentence explains why we have day and night on Earth?

- A. The Sun sends out different amounts of sunlight at different times.
- B. Earth moves in a circle around the Sun in about 365 days.
- C. The Moon moves between the Sun and Earth to block sunlight during nighttime.
- D. Earth spins on its axis so that only half of it receives sunlight at a time.

37. Ben is investigating how soapy water currents cause floating objects to move. He pours soapy water into a plastic container, adds objects, and blows on the water surface to create a current. He then puts on his goggles to observe the movement of the objects. What could Ben do to make his investigation safer?

- A. put on his goggles before starting the investigation
- B. use a glass container instead of plastic because glass is stronger
- C. take off his goggles so he can better see what he is doing
- D. work with another student so they can talk about the investigation



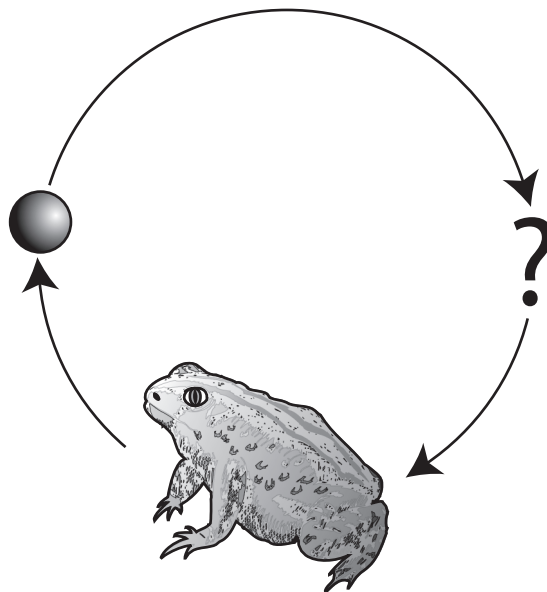
38. Look at the table below.

Mineral	Hardness	Color
Quartz	7	Sometimes colorless
Graphite	1–2	Gray

Which question can be answered by using these data?

- A. What are quartz and graphite used for?
- B. How can someone tell quartz from graphite?
- C. How common are quartz and graphite?
- D. Will quartz and graphite react with vinegar?

42. The drawing below shows part of the life cycle of a frog.



Which picture belongs in this life cycle?

- A.
- B.
- C.
- D.



43. Christina is investigating whether plants grow as well under lightbulbs as they do in sunlight.

- She has two bean plants in identical containers and soil.
- She puts one plant in a sunny window. She puts the other plant in a closet and turns on the light. Both locations are the same temperature.
- She keeps the light in the closet on during the day.
- She gives both plants the same amount of water each day.

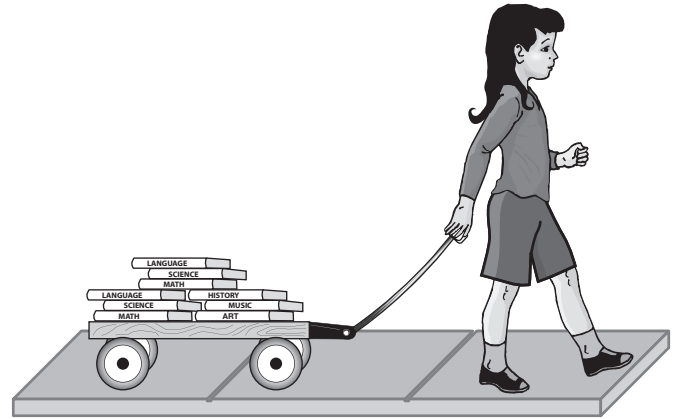
Is Christina's investigation a scientific test?

- A. yes, because only one person is doing the test
- B. yes, because all conditions except the light are the same
- C. no, because more than one plant is being used
- D. no, because the light does not stay on for 24 hours each day

44. Owen put an open can of juice in the freezer overnight. What **most likely** happened to the juice?

- A. It disappeared.
- B. It became solid.
- C. It separated into fruit and water.
- D. It changed color and tasted different.

45. Hanna is pulling a wagon full of books, as shown below.



Which sentence **best** describes the motion of the wagon?

- A. It is zigzagging.
- B. It is going around and around.
- C. It is moving in the same direction as Hanna.
- D. It is moving in the opposite direction from Hanna.

46. Ms. Juneau is deciding whether she wants the driveway to her new home to be made from concrete or loose gravel. Which material is less harmful to the environment?

- A. concrete, because it lasts longer
- B. concrete, because water runs off of it
- C. gravel, because water reaches the soil beneath
- D. gravel, because it is less expensive



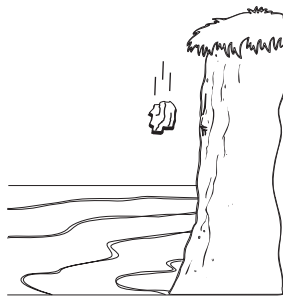
50. Look at the food chain below.

**Plant → Grasshopper → Mouse → ?**

Which animal would be correct to add to this food chain?

- A. deer
- B. rabbit
- C. salamander
- D. snake

51. A rock is falling off the edge of a cliff into the ocean, as shown below.



What is making the rock fall into the ocean?

- A. Earth’s gravity
- B. Earth’s moon
- C. Earth’s shape
- D. Earth’s magnetism

52. Look at the table below.

**Observations from Vineyard Hill**

Location	Fossil Observations	Rock Observations
Top of hill	Beaver bone, wood	Shale
Middle of hill	No fossils	Sandstone
Bottom of hill	Shark teeth, fish bone	Limestone

Which conclusion about the past can be **correctly** made from these observations?

- A. Vineyard Hill was once much taller.
- B. An ocean once existed at Vineyard Hill.
- C. A desert once existed at Vineyard Hill.
- D. Vineyard Hill once had a colder climate.

53. What does the Sun provide for Earth?

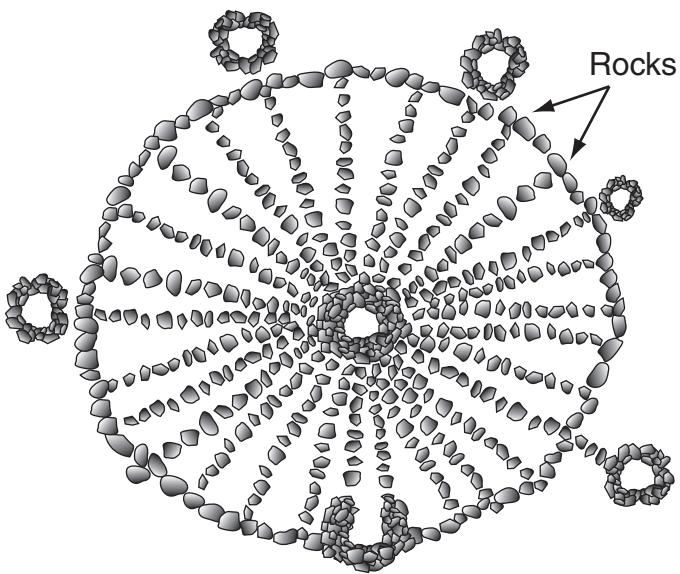
- A. air
- B. light
- C. minerals
- D. water

## Science Session 3

**This test session includes multiple-choice questions and a question for which you must write out your answer. Be sure to answer all parts of the question.**

**Mark your answers in the section marked "Science—Session 3" in your Student Response Booklet.**

55. One of the many ways Plains Indians used medicine wheels was to tell when winter was coming. The picture below shows what a medicine wheel looks like.



The rock lines point to the place where an object rises into the sky on special days. This object gives heat and light to Earth. What is the object?

- A. Jupiter
- B. the Moon
- C. the Sun
- D. Venus

56. Which action would need the use of telescopes?

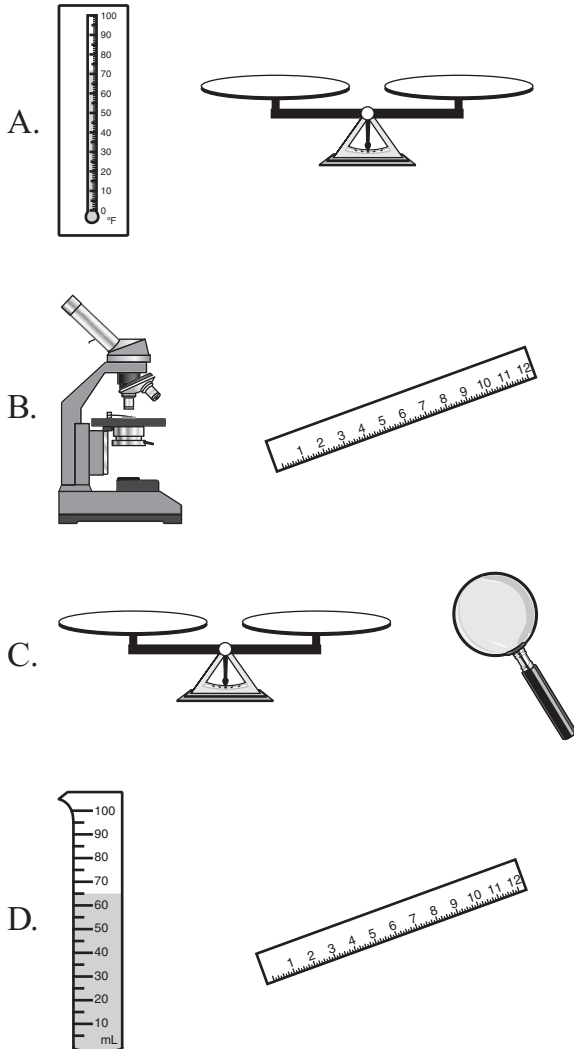
- A. studying life in pond water
- B. collecting light from space
- C. launching people into space
- D. sending radio signals to a satellite

57. Which action uses technology?

- A. watching bees make honey
- B. seeing a meteor fall from the sky
- C. observing a bean seed sprout between wet paper towels
- D. separating recycling materials using an electromagnet



58. Grant plans to test how much water tomato plants need to grow. He will give different amounts of water to five tomato plants. He will then record how tall the plants grow each week for three weeks. Which tools will Grant need for his investigation?



59. Hot water is poured into a cold teacup. Soon the teacup becomes warm. How does the teacup get warm?
- A. The hot water soaks through the sides of the teacup.
  - B. Heat is transferred from the hot water to the teacup.
  - C. The hot water boils and spills over the side of the teacup.
  - D. The hot water gives off steam that warms the teacup.
62. Stan pushes a chair and moves it 50 cm in a straight line. Paul pushes the same chair and moves it 75 cm in a straight line. What **most likely** made the chair move farther when Paul pushed it?
- A. Paul's push made the chair lighter.
  - B. Paul's push was stronger than Stan's.
  - C. Paul pushed on the seat of the chair.
  - D. Paul is taller than Stan.
63. A bird picks up a piece of food and then immediately takes flight. While flying higher and higher, the bird drops the food. In which direction will the piece of food go?
- A. It will continue to go higher and higher.
  - B. It will stay on the same path as the bird.
  - C. It will circle Earth like satellites do.
  - D. It will stop rising and then fall toward Earth.



64. Look at the table below.

**Tim's Weather Record for September in Helena**

<b>Day</b>	<b>High Temperature (°F)</b>	<b>Low Temperature (°F)</b>	<b>Sky Description</b>
Thursday	73	49	Mostly cloudy
Friday	60	39	Partly cloudy
Saturday	58	38	Partly cloudy
Sunday	?	?	?

No major change is expected in the atmosphere. Which record **most likely** shows the weather on Sunday?

A.

<b>High Temperature (°F)</b>	<b>Low Temperature (°F)</b>	<b>Sky Description</b>
95	65	Sunny

B.

<b>High Temperature (°F)</b>	<b>Low Temperature (°F)</b>	<b>Sky Description</b>
59	40	Sunny

C.

<b>High Temperature (°F)</b>	<b>Low Temperature (°F)</b>	<b>Sky Description</b>
31	23	Light snow

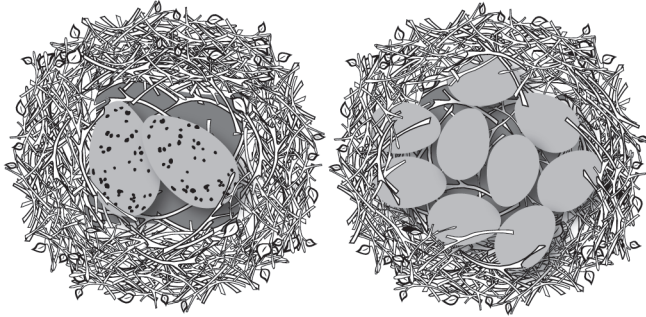
D.

<b>High Temperature (°F)</b>	<b>Low Temperature (°F)</b>	<b>Sky Description</b>
88	75	Thunderstorm





65. Two different kinds of birds laid the eggs shown in the picture below.



Loon

Chicken

Which statement comparing the birds' eggs is correct?

- A. The loon laid smaller eggs than the chicken.
- B. The loon laid fewer eggs than the chicken.
- C. Only the loon's eggs have a somewhat oval shape.
- D. Only the chicken's eggs have spots on them.

69. Look at the food chain below.

**Plants → Rabbit → Hawk**

Which sentence about the organisms in the food chain is correct?

- A. The hawk eats the plants.
- B. The rabbit competes with the hawk for food.
- C. The plants rely on the rabbit and hawk for energy.
- D. The hawk eats the rabbit.

70. Sarah places two magnets in the positions shown below.



Magnet A



Magnet B

What will happen?

- A. Magnet A and Magnet B will move toward each other.
- B. Magnet A and Magnet B will move away from each other.
- C. Magnet A will move in a circle and Magnet B will not move.
- D. Magnet A and Magnet B will not move.



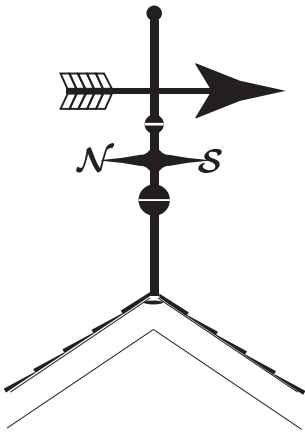
71. Jessica charged different materials by rubbing them with a piece of wool. She then used each material to try to pick up small bits of paper. Her results are shown in the table below.

**Charged Materials and Paper**

Material	Number of Bits of Paper Picked Up
Rubber rod	10
Glass rod	8
Iron rod	0
Wooden rod	2

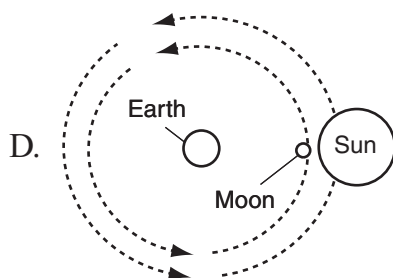
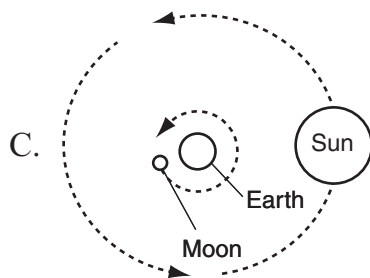
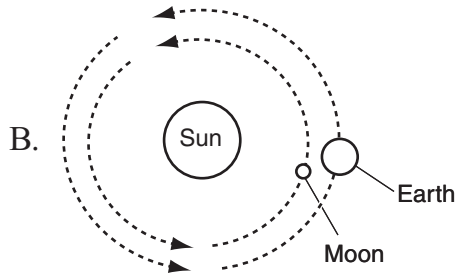
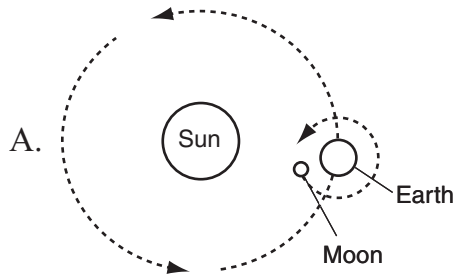
- Which sentence **best** compares the materials?
- A. The rubber and glass rods picked up the most bits of paper.
  - B. The iron and wooden rods picked up the most bits of paper.
  - C. The rubber rod picked up five times as many bits of paper as the glass rod.
  - D. The iron rod picked up more bits of paper than the wooden rod.

72. Look at the picture below.

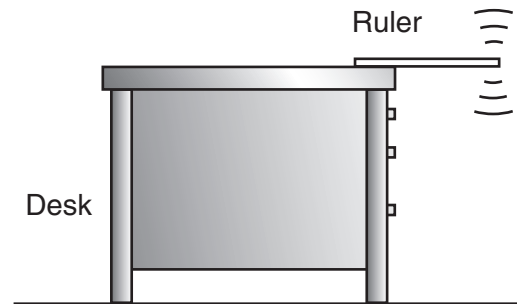


- Which kind of weather information can be found with this tool?
- A. air temperature
  - B. wind speed
  - C. rainfall amount
  - D. wind direction

73. Which model **best** shows the relationship between Earth, the Sun, and the Moon?



77. Tony holds a ruler over the edge of his desk. He hits the end of the ruler, making it vibrate, as shown below.



What does the ruler produce?

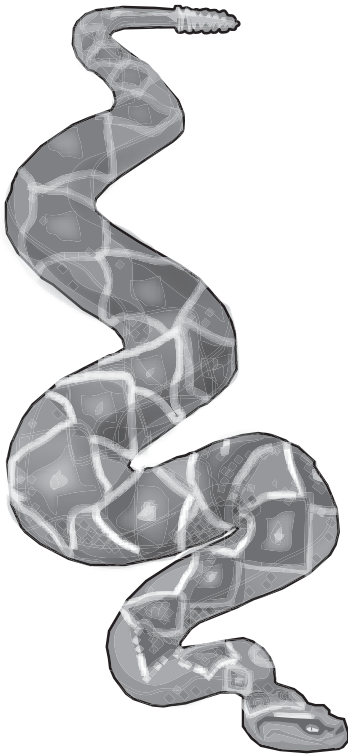
- A. electricity
- B. light
- C. magnetism
- D. sound

78. The students in Mr. Trumble's science class are observing snails and earthworms. When the students finish their investigation, for their own safety, they must

- A. wash their hands thoroughly with soap and water.
- B. put any spilled dirt in the animals' container, not the trash.
- C. let Mr. Trumble put the animals away.
- D. take the animals home, rather than leave them at school.



79. Look at the picture of a rattlesnake below.

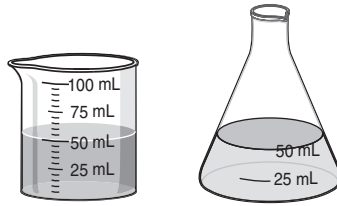


Why does a rattlesnake shake its tail?

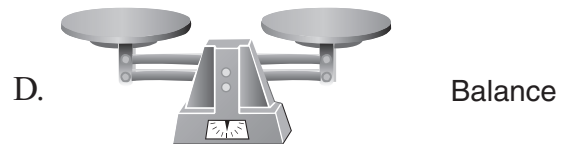
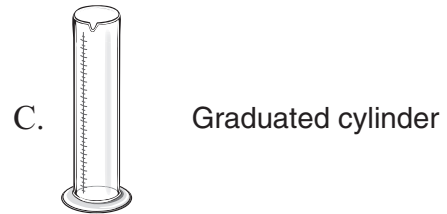
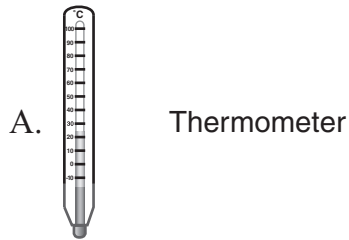
- A. to burrow into the sand
- B. to sense the environment
- C. to warn other animals to stay away
- D. to give it balance as it moves



80. Look at the pictures below.



Allen is grouping tools that can measure 50 mL of liquid. Which other tool should he add to this group?



**Write your answer in the space provided for it in your Student Response Booklet.**

81. Daniel thinks flowers will bloom sooner if they are grown in soil with fertilizer instead of soil without fertilizer. He is designing an investigation to test his idea.

Describe **three** things Daniel must do to make his investigation a scientific test.



# Acknowledgments

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